

in the treatment of Colles's fracture, and content ourselves with a broad strip of adhesive plaster around the wrist. Dr. Moore advises merely a compress and bandage. Both these gentlemen claim to have achieved constant and perfect successes by no other means. Without pretending to cast a doubt upon their statements, I must confess that were my own wrist the seat of such an injury, I should be unwilling to trust such seemingly imperfect protection; and that before taking the chances of unpleasant results in practice, I would make very cautious experiments under such circumstances as would enable me at once to detect and repair the mischief which I should certainly dread.

As to the degree of success which may be looked for in the treatment of Colles's fracture, I can only say that there seems to be reason to believe that the average of results is better now than it was twenty years ago, and to hope that further improvement is in progress.

Nothing must satisfy us, in this or any other department of practice, short of the very best attainable results. If we can get, in addition to the usefulness of the limb, which Nature generally manages, a complete restoration of form, we ought not to be content unless we use the means, the care, and the skill, which will secure this advantage to our patients. Nor should this standard be adopted only for certain cases where deformity would be especially mortifying to its subject and discreditable to the surgeon; it should be aimed at invariably, in hospital practice as well as in private, in the poor as well as in the rich.

ARTICLE XVII.

A CASE OF CHOLECYSTOTOMY, WITH REMARKS. By W. W. KEEN, M.D.,
Surgeon to St. Mary's Hospital, Philadelphia.

FOR the following history I am indebted to Drs. Bonifil and Ewing, the Resident Physicians of the Hospital, and to the courtesy of my medical colleague, Dr. James Simpson, for permission to use it.

Mary H., æt. 60, Irish, married, has had six children, was admitted to St. Mary's Hospital, service of Dr. Simpson, October 16, 1878. Her general health had always been good until six months ago, when she began to have a dull, aching pain in the back, between the shoulders and in the left hypochondriac region. This continued for about two months, when she began to have a sharp, shooting pain in the right hypochondriac region, loss of appetite, vomiting, constipation of the bowels, and in a short time became jaundiced. The vomiting continued quite constantly for six or seven weeks. The jaundice became deeper, appetite continued poor, and bowels constipated, vomiting frequent, stools clay coloured, and urine darkly coloured, until admitted to the hospital.

Present condition (October 16th.)—Emaciated, intensely jaundiced,

almost mahogany coloured, and has a worn, pinched expression. Suffers from a dull, occasionally shooting pain in the right hypochondriac region, and sometimes in the left side and back. She has no appetite, and can take no solid food without vomiting; can take milk better, but sometimes vomits that; bowels constipated, and, when opened, the stools are clay coloured. The urine is very dark. Suffers very greatly from itching all over the body, but not enough to prevent good sleep. Everything she looks at is tinged with green. A white shirt bosom especially is quite green to her eye.

The liver is somewhat enlarged, and lower than usual, the dulness extending from the seventh rib to two inches below the border of the ribs, and below it can be felt a soft fluctuating mass, globular in form, about 4 or 4½ inches in diameter, reaching to about half an inch above a line drawn across the abdomen from the crest of the ilium.

Treatment.—R. Sodii bicarbonat. gr. iv, Acid. tartaric. gr. iv, every three hours.

17th. Vomits less frequently.

18th. The tumour has enlarged perceptibly, and is now about 5 inches in diameter. A hypodermic syringe was used as an aspirator, and 3ss of dark fluid drawn from the tumour. Nitric acid shows that it contains bile. Suffered much pain after the aspiration. Morph. sulph. gr. ¼, hypodermically.

19th. Suffers still a good deal of pain when the hypodermic point was passed, and there is slight tenderness on pressure.

20th. Pain better. Bowels opened, and the stool found to be dark greenish, watery, somewhat resembling tea.

21st. No pain; feels more comfortable. Stool dark and more natural.

26th. To date, condition about the same. At Dr. Simpson's request, Dr. Keen saw her in consultation with a view to aspiration. In view of the pain before experienced, it was not thought best to use an aspirator needle, but a hypodermic point was attached to the aspirator, and plunged into the tumour; 3x of dark fluid was drawn off, when no more could be obtained. Morph. gr. ¼, hypodermically. No palpation of the gall-bladder was made for two days, lest a little fluid should be pressed out of the tumour and cause peritonitis.

27th. Very sharp pain in the tumour, and some tenderness on pressure; moderate tympanites is now present. Bowels not opened. Temp. 102°.

28th. A careful examination was made for stone in the gall-bladder, but none could be found. Suffered much pain afterwards. Tongue dry. Temp. 101°. Stool clay coloured.

29th. Pain and tenderness almost entirely disappeared. Feels much better.

Nov. 3. Transferred to the Surgical Ward. Has been feeling much better for the last two days; less vomiting; no pain; sleeps fairly well; tympanites persists; temp. 98.4°. The tumour has enlarged since the 26th; measures 5½ inches in diameter each way, and extends now from the median line to the right flank, and from the liver border to the groin, filling the entire right half of the belly. It can be readily grasped by one or two hands on depressing the belly wall; is globular, fluctuating, moderately tense, and moderately tender.

Operation.—After consultation, an exploratory operation was decided on, and was done at 1 P. M., November 4th, with the usual antiseptic precautions. Present, Drs. Grove, Mears, Koerper, Roberts, Ewing, and

Bonifl. An incision was made, about three inches long, parallel with and two and a half inches to the right of the linea alba, beginning three-quarters of an inch above the level of the umbilicus, and over the most prominent part of the tumour. Before incising the peritoneum, all bleeding was stopped, two ligatures and four artery forceps being used. The peritoneum being opened, the lower border of the liver was seen projecting for nearly an inch. It was pulled up by a retractor, and the tumour was then seen as a spherical mass. No one was allowed to pass a finger into the abdominal cavity but myself, as I wished to add no possible risk. I passed a finger in and traced the tumor readily up to the under surface of the liver, the large globular mass becoming somewhat sausage-shaped. The choledoch duct was not felt. Two points of adhesion to the omentum were found at the lower part of the tumour, both slight, both recent, and neither was disturbed. At no time was the omentum or the bowel even seen in the wound, except once, when vomiting threatened to cause the intestine to protrude. Pressure readily prevented this, and the bowel receded into the abdominal cavity. Several ounces of bloody serum escaped from the peritoneal cavity. It was of a slightly greenish colour. The liver, gall-bladder, intestine, and belly wall in the incision were all of a dirty-yellowish or brownish-green. A large aspirator needle was introduced into the gall-bladder, and ℥vii of a dark brown fluid were removed. No more would flow, yet the gall-bladder was evidently nearly as tense as ever. It was seized by a double-hooked forceps, and an incision of one and a half inches made into it; a scoop or half-funnel used to carry off the water in syringing the ear being held under the opening, in order to carry off all the contents of the tumour without any escaping into the belly. I had punched a series of small smooth holes in its base, intending to pass a thread through the wall of the tumour, and tie it fast to the scoop before opening it; but the thread broke on tying, and I abandoned any further attempt at fastening it, as I did not wish to lose any more time, nor to pass another thread, as I found that the wall of the cyst was very vascular, the slightest puncture bleeding considerably. The threads already there were used later as sutures. The scoop was simply held in place, its flange being pushed into the abdominal opening, and the opening in the gall-bladder was held in place over it by the forceps. The walls of the tumour could not be drawn out of the abdominal cavity, the fluids which had been already aspirated not having relieved the tension sufficiently. The scoop, therefore, answered admirably, for otherwise a large amount of the contents must unavoidably have passed into the belly.

The wall of the gall-bladder was moderately thickened. As soon as the gall-bladder was opened it was plugged from within by an apparent clot, which was of a deep black colour. I inserted my finger, and found the bladder filled with a mass resembling in its feel a recent soft clot in the uterus. By the finger it was broken up, and in larger and smaller masses was scooped out through the opening, amounting in all to ℥xij , making ℥xxx of contents obtained from the tumour. No gall-stone was found. The lower wall of the tumour had now contracted, and was seen through the opening. A bullet probe was passed upwards for a distance of six or seven inches, and the interior thoroughly but cautiously explored. Nothing was learned except that the wall was smooth, and no stone was to be felt. It was uncertain whether the cystic duct was closed or open, as I could not be sure that the probe had entered it. Nor did the finger reveal more. The opening in the gall-bladder was therefore secured to

that in the belly wall by eight sutures of carbolized silk, and at the upper angle one hare-lip pin, all passing through the entire abdominal wall, including the peritoneum. Before this was done, careful search was made for bleeding vessels, and a little blood was removed from the belly by carbolized sponges. The cut wall of the gall-bladder bled considerably, and also the outer wall of the incision—not from any vessels, but by continuous and troublesome oozing. One small vessel spirted also from the inner wall of the bladder close to the cut. A long acupuncture needle was therefore passed, including the outer wall of the incisions in both the belly wall and the gall-bladder, and a loop of wire was tightened over it. This stopped all bleeding. The fistula in the gall-bladder was left open, two carbolized sponges being placed below it to absorb any discharge of biliary matter (none of which had so far appeared), and the whole was then dressed in the usual antiseptic method. The operation lasted one hour and ten minutes.

After the operation she suffered a good deal from shock, became cold, and almost pulseless. Whiskey was given, and hot bottles applied to the legs and body. In about an hour she had revived, and was doing pretty well; suffered from pain in the wound; vomited frequently. Morph. gr. $\frac{1}{4}$ hypodermically.

7 P. M. Dr. Ewing found the dressing saturated with blood. It was removed, under the spray, and a half handful of clotted blood found under it. She had probably lost some eight or ten ounces. No one vessel could be found bleeding, but there seemed to be an oozing from the cut surface sufficient to make a little stream of blood flow from the wound. Ice was applied, which much diminished the flow, and stopped it entirely in about an hour. He passed his finger into the opening made in the gall-bladder, which was closed by a clot of blood, and there followed a stream of blackish fluid tinged with blood, about four ounces in all.

8.30 P. M. Her condition was only tolerable; pulse weak: does not seem much weakened, however, by the loss of blood; suffers no pain: temp. 98.4° . She has had whiskey $f\text{3ij}$; milk $f\text{3ss}$; lime water $f\text{3ss}$; every half hour since the operation. This is now given in smaller quantities and at more frequent intervals. Vomiting about every half hour.

11 P. M. No bleeding; still vomiting.

2 A. M. Morph. sulph. gr. $\frac{1}{4}$, hypodermically, as she was restless and suffered considerable pain; temp. $98\frac{1}{2}^{\circ}$; pulse 100.

Nov. 5. 8.30 A. M. Very weak, almost pulseless, but surface warmer, and tongue moist. Vomited about every half hour all night. Remained in the same condition all the morning.

2 P. M. Whiskey $f\text{3j}$; milk $f\text{3ij}$; given by enema every hour.

She gradually became weaker, vomiting almost constantly until 1 A. M. Nov. 6th, when she died, 36 hours after the operation. *Post-mortem* by Dr. Ewing 15 hours after death. Rigor mortis marked; much emaciated; not so deeply jaundiced as when admitted to the hospital. An incision was made from the ensiform cartilage to the pubes, and a second across the hypochondriac region. There was no peritonitis. The entire contents of the belly without an exception were of a dirty but deep greenish colour. A recent clot was found that would represent about 3iv of blood. The liver, gall-bladder, and as Dr. Ewing supposed, the duodenum and common choledoch duct were removed with the part of the abdominal wall, including the incision. The liver was moderately enlarged, and very soft, and its capsule tore with abnormal ease. Its colour on section was a dirty

ochrish-green, and its disintegration such that no positive conclusion could be reached as to whether the bile ducts were dilated. The two hepatic ducts were dilated, so as to admit the forefinger. The gall-bladder was slightly adherent to the abdominal wall at the seat of the operation. It had shrunk greatly after the evacuation of its contents, was pear-shaped, and now measured six inches long from its duct to the base, and three and a half inches across the widest part just above the base. The cystic duct proper was not dilated. Most unfortunately the common choledoch duct just beyond the junction of the hepatic and cystic ducts was cut off. The inner surfaces of both the gall-bladder and the hepatic ducts were of the same general dirty greenish-ochre colour. A few points of slight ecchymosis were seen.

The two bottles, one containing the unmixed liquid obtained by aspiration of the gall-bladder, the other, seeming clots from the gall-bladder after opening it (this last unavoidably mixed with some recent blood from the operation) were referred for microscopical examination to Prof. J. G. Richardson, and for chemical examination to Dr. Henry Leffman.

Microscopical Examination.—Dr. Richardson reports as follows :—

“The aspirated fluid contains a few plates of cholesterine and numerous altered (swollen and decolorized) red blood-corpuscles.

“The denser liquid is loaded with blood-corpuscles, plates of cholesterine, and brownish granular material, no doubt the débris of altered blood. Both fluids show the two bands in the green of oxidized hæmatin when examined under the micro-spectroscope.

“Experiments made to determine the destructive power of bile upon blood resulted as follows :—

“In a mixture of equal parts of fresh blood from my finger, and of bile removed at an autopsy eight hours previously, the red corpuscles were invisible after twenty minutes.

“Four drops of the same bile, added to a mixture of four drops of fresh blood in 60 μ of .75 per cent. salt solution, caused the disappearance of the red corpuscles in less than twelve hours. One drop of the same bile in a similar mixture produced no obvious effect after twelve hours' contact.

“Hence, if we discover well-defined red blood-corpuscles in a fluid supposed to contain bile twelve hours after it is drawn from the body (or twelve hours after blood has been mixed with it), we may conclude that the amount of hepatic secretion in the liquid does not exceed seven per cent. (6.66).”

Chemical Examination.—Dr. Leffman reports as follows :—

“The samples consisted of a dark brownish-black liquid in quantity about six fluidounces, and a reddish-brown liquid in quantity about twelve ounces, and containing numerous clots, some of them fresh blood clots, others very dark in colour. The first mentioned liquid was tested for the bile acids and bile pigment directly, but gave no results. Even upon evaporating a portion to dryness no satisfactory reaction could be obtained, and the absence of the characteristic substances of bile seemed probable. However, a more thorough examination was made, adding to the remainder of the liquid some alcohol, filtering and evaporating to dryness, treating with ether, and then exhausting the residue with absolute alcohol. This alcoholic extract on being carefully evaporated to dryness gave, with the usual test, a splendid colour, indicative of the presence of the bile acids, though in very small amounts. The liquid was clearly not normal bile. Of the second liquid a portion of the darker coloured clots was taken, and treated so as to extract the cholesterin. The quantity taken was about four

grammes, and the bulk of the mass about two cubic centimetres. The experiment indicated that the quantity of cholesterin was very small. I did not obtain from the above quantity an amount sufficient to determine the weight. The dark clots were, therefore, chiefly old blood clots and not partly inspissated bile. As a confirmation of this I also observed that the dark clots when exposed to the air reddened perceptibly as blood does from oxygenation on a similar exposure."

Remarks.—Originally proposed by Petit and later by Maunder and Hughlings Jackson, so far as I know this is only the second case in which cholecystotomy has been done. The first will be found in the *British Medical Journal* for June 8, 1878, p. 811. (See this Journal for October 1878, p. 565.)

In that case the patient, also a woman, æt. 45, suffered with persistent jaundice, clay-coloured stools, nausea and vomiting, and the most intense itching. This wore out the patient, and was not relieved by any medication external or internal, but disappeared after aspiration, when $\frac{3}{4}$ xxxij of a dark brown fluid were removed from the gall-bladder. One month later cholecystotomy was performed by Dr. J. Marion Sims. He removed $\frac{3}{4}$ xxxiv more of a similar fluid, and 60 gall stones, and established a biliary fistula. The patient did well for a week, when general hemorrhages came on and she died 30 hours later with black vomit. Eighteen more sacculated gall-stones were found. The bile ducts in the liver were dilated. There was no impacted gall-stone in the common choledoch duct. No mention is made of the exact condition of the hepatic or cystic ducts, but after the gall-stones were removed from the gall-bladder a probe could be passed from the gall-bladder into the intestine.

The first question that presents itself in the present case is that of diagnosis. Was there obstruction, and if so what was the cause of it? There is no reason to doubt that there was a mechanical obstruction in the common choledoch duct. The deep and long-continued jaundice for over four months, the clay-coloured stools, the nausea and vomiting, the very persistent and annoying itching, and the distended gall-bladder, all observed during life, clearly pointed to this; while the distension of the gall-bladder and of the hepatic ducts positively determined at the post-mortem point to the common choledoch duct as the seat of the obstruction. The unfortunate accident which precluded any examination of the common choledoch duct leaves us in doubt as to its cause, whether an impacted gall-stone, or inflammatory thickening, or occlusion. From the absence of any history of biliary colic, and the gradual onset of the disease, it was most likely not a gall-stone. No tumour was found that could have occluded it by pressure.

The second point for discussion is the symptoms. Dr. Sims correctly quotes Murchison as asserting that itching is uncommon except in jaundice from mechanical obstruction. Frerichs says it is present in one-fifth of the cases, but makes no mention of its relation to mechanical obstruction. Watson mentions it as present at the beginning of an attack of jaundice, but is also silent as to any special significance to be attached to it. I have examined several other authors, and find usually no mention made of it. It is a point of great importance if it be true that it is in any sense

pathognomonic of obstruction. In the present case it was observed, but though severe did not assume the intense form that was seen by Dr. Sims.

The increase in size of the gall-bladder is of moment. The enlargement was gradual and continuous, but no special increase I am told took place after the first tapping, when a few drops only were withdrawn by the hypodermic syringe for diagnostic purposes. It is to be noted that precisely the same needle was used the second time, for I was unwilling to risk the use of even the smallest aspirator tube in view of the pain, local inflammation, and fever which followed the first puncture. That this was no needless precaution was shown by the similar but more marked symptoms that followed the second puncture. At the operation a large quantity of old clotted blood was removed from the gall-bladder. Did this come from hemorrhage following the puncture? I am inclined to believe that some of it did but not all. The gall-bladder perceptibly increased in size after this puncture (from nearly 5 to $5\frac{1}{2}$ inches in diameter), but it did not double its size, yet the amount of clot found was $\frac{3}{4}$ xxij, out of $\frac{3}{4}$ xx. Moreover it will be observed that at the second puncture when $\frac{3}{4}$ x of fluid were removed no more could be obtained, which would seem to show that the clots were then present. These facts, taken in conjunction with the hemorrhagic tendency in these cases generally, and with the oozing which occurred at the time of the operation and later, and with the fact that no symptoms were observed after the second puncture indicative of serious bleeding, all incline me to the belief that much of the blood found was due to hemorrhage preceding both of the tapplings.

As to the character of the fluid contained in the gall-bladder, in Dr. Sims's case it is stated that the fluid was not bile, as was proved both microscopically and clinically. In the present case there seems to have been a small percentage of bile present, but certainly less than $\frac{1}{15}$ th (6.66 per cent.) or the blood corpuscles would not have been altered but destroyed, as Dr. Richardson's careful experiments show—a view confirmed also by Dr. Leffmann's chemical examination.

In future cases this may be of value from a diagnostic point of view. Some of the fluid can always be obtained either by the aspirator, or hypodermic needle, and can be examined both microscopically and chemically, and tested by its effect on normal blood. These combined tests will prove its character beyond a doubt, and show the stage the disease has reached. In such a new operation all the light that may aid us in reaching a correct conclusion is to be eagerly sought.

But, after all, the great question is, was the operation justifiable? It is plain that I would answer in the affirmative, or I should not have done it. And after careful consideration I am still of the same opinion. True, the patient died, but the ante-mortem symptoms no less than the post-mortem facts indicate that if nothing had been done death was very near, either from exhaustion, hemorrhage, or even rupture. That patients can live

readily with biliary fistulæ is well known, and it is but following the indication of nature in such cases to make a fistula by operative means; and with the comparative safety of the antiseptic method I believe it to be justifiable to proceed as has been done in these two cases.

"Given," says Marion Sims, "a case of persistent jaundice with clay-coloured stools, nausea and itching [and I would add perceptible enlargement of the gall-bladder], we may almost certainly infer that there is mechanical obstruction of the ducts of the gall-bladder. Why then should we wait for months for the gall-bladder to become dropsical and to swell up into an enormous tumour, filling the right hypochondrium and extending even to the iliac region [and causing hepatic degeneration incompatible with life]? Why not open the abdomen, explore the condition of the liver, and if we find gall-stones, why not open the gall-bladder, remove the gall-stones, and sew up the incision in the gall-bladder with the same security, the same confidence that we would stitch up a wound of the intestine? There is no reason why it should not be done, and it will be done; so it will eventually be seen that the operation of cholecystotomy, joined with Dr. Handfield Jones's proposition, will open up a new field in the great domain of abdominal surgery."

Dr. Handfield Jones's proposition (*Med. Times and Gaz.*, March 9, 1878, p. 247) was to open the abdomen in a case of obstruction believed to be due to gall-stone, and push the gall-stone into the intestine by manipulation without opening the gall-bladder. When in the present case my finger was introduced into the belly, I could detect nothing more than the diminishing pyriform tumour of the gall-bladder. When I had opened the gall-bladder, had I found a gall-stone and been able to convince myself that the duct was open after the removal of the stone, I was prepared to sew up the incision in the gall bladder by Gély's intestinal suture, and return it bodily into the belly; but not being able to convince myself of the removal of the obstruction I deemed it best to make the fistula, and in case of recovery to treat it as circumstances indicated.

As to the operative procedure I have little to add. The danger of the escape of the fluid into the abdominal cavity was admirably met by the ear-scoop. A larger one provided with a clamp or hook at each corner might be used with great advantage I think in ovariectomy. The hemorrhage in any advanced case will always be a serious question, for the general oozing is difficult to arrest. Even had Dr. Sims's case not warned me, I would not have removed any of the gall-bladder, and yet as it was, I had trouble with the hemorrhage. One or two slight inadvertent pricks caused considerable oozing.

The cause of death was threefold; 1st, shock; 2d, secondary hemorrhage; and, 3d, her generally deteriorated condition, due to persistent vomiting and the far advanced disintegration of the liver. Her age, too, was much against her. Had she come into the hospital at a much earlier period, when the obstruction was recent and the cystic tumour just beginning, before her liver had undergone such profound changes and her health been so deeply undermined, then I believe the operation might very possibly have saved her life; this, too, independently of the cause of

the obstruction, whether it be inflammation or a gall-stone. For if a gall-stone it might possibly have been removed, or if inflammation, the relief of the tension might have allowed it to subside, and the duct to become pervious; and even if these results had not been obtained, the dangers of an operation and a permanent biliary fistula are at least not greater than those of continued obstruction.

ARTICLE XVIII.

DOUBLE LIGATION OF THE INTERNAL CAROTID ARTERY IN 1869, by Dr.

A. T. LEE, deceased, formerly of Kingston, Tennessee. Reported by MERIWETHER LEWIS, A.M., M.D., President of the Loudon County Medical Society, Lenoir, Tenn.

As Louisiana was the pioneer State of the Union in the performance of Cæsarean section, and Kentucky of Ovariectomy, so to Tennessee is already accorded the honour of the first successful performance of the operation mentioned in the above caption—the internal carotid having been ligated by Prof. W. T. Briggs, of Nashville, in February, 1871.

An interesting little *brochure*, by Prof. W. K. Bowling, published in 1874, will be remembered, in which the priority of Prof. Briggs was definitely established; Dr. Sands, of New York, having ligated the artery in October, 1872, eighteen months subsequent to Briggs's operation.

From the new case related below, it will be seen that the internal carotid was ligated by Dr. Lee, of Kingston, Tenn., on the 31st of July, 1869, one year and nine months before Dr. Briggs's case.

On that day, David C. White, a miller, was wounded in the neck, at the angle of the lower jaw, by the large blade of a pocket knife, which penetrated to the depth of three or four inches, and injured the internal carotid. The integumentary wound was somewhat in the shape of the letter **S**. Alarmed by the tremendous jets of arterial blood, Dr. J. M. Denning, in whose drug store the stabbing occurred, immediately seized the man's neck and compressed the carotids. Happening to be close at hand, Dr. Lee promptly cut down upon the artery by the usual incision, exposed it by careful dissection, found the bleeding point, and applied a ligature on the proximal end of the artery.

The patient, who had fainted, now rallied, and severe arterial hemorrhage occurred, coming, of course, through the vertebrals, the opposite internal carotid, and the circle of Willis. A ligature was, therefore, immediately thrown around the distal portion of the injured vessel and arterial bleeding at once stopped. The patient was now pulseless, and death was considered imminent; but under prompt and energetic stimulation with whiskey and ammonia the circulation soon became good; respiration grew full and regular; and, at the expiration of fifteen minutes from the close of the operation, the patient spoke. He was confined to bed for five weeks.